EXHIBIT B

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF WYOMING

BRIAN KEHLER,	)	
	)	
Plaintiff,	)	
	)	
v.	)	**Civil Action No. 15-CV-127-J**
	)	
BRIDGESTONE AMERICAS TIRE OPERATIONS, LLC; COMMERCIAL TIRE, INC. AND JOHN DOE CORPORATIONS 103,	)	
	)	
Defendants.	)	

AFFIDAVIT OF JOSEPH L. GRANT

Joseph L. Grant, under penalty of perjury, states as follows:

1. I am self-employed as a consultant and expert in tire usage and performance, tire technology, and tire failure analysis. Attached to this Affidavit is my curriculum vitae. The facts set forth in my curriculum vitae are true and correct and accurately reflect my education, employment and other matters set out therein.

2. I graduated from Fenn College of Engineering at Cleveland State University in 1971 with a Bachelor of Science in Mechanical Engineering. I have also obtained further education and learning through attendance at numerous seminars, conferences, and meetings related to tire and vehicle technology and accident analysis subjects and have belonged to various professional organizations related to engineering and tire technology and performance.

3. Prior to my self-employment as a tire consultant and analyst, I was employed as a tire engineer for more than 34 years by Continental Tire North America, Inc., previously known as The General Tire & Rubber Company and Continental General Tire, Inc. (I refer to the company as "General Tire" in this affidavit). My first job at General Tire was in Engineering Training in the Technical Service Department of the Akron, Ohio plant. In 1972, I became the Project Engineer in the Advanced Tire Development Section. I was responsible for the development of advanced concept tire products, including advanced bias truck tires. In 1978, I became the Manager of the Bias Passenger Car Tire Engineering Section. In 1980, I became the Manager of the Replacement and Private Brand Passenger Car Tire Engineering Technology Section. In 1986, I became the Section Manager of Radial Truck Tire Engineering. My responsibilities included supervising the Engineering Development Group for radial truck tires. Also in 1988, I became the Director of the Commercial Tire Technology Section and was responsible for the Engineering and Compound Development Group for Commercial Products including bias and radial medium-and heavy-service truck tires. From 1993 until my retirement at the end of 2005, I was the Director of Product Analysis, where I was responsible for the failure analysis of tires manufactured by General Tire, and also analyzed other manufacturers' tires. During my career, I had responsibilities for the design, development, testing and the forensic analysis of tires.

4. I am the inventor credited with a U.S. patent in the area of tire manufacturing regarding the "Method of Forming Belted Radial Tires from a Cylindrical Tire Band (1977)."

5. I have authored four papers. The first paper is entitled *What Makes a High Performance Tire Different than a Regular Tire*? This paper has been presented to the Akron Rubber Group in January 1996, The Clemson University Tire Industry Conference in October

1986 and to the American Retreading Association in April 1987. The second paper is entitled *Rim Line Grooves as an Indicator of Underinflated or Overloaded Tire Operation in Radial Tires*. This paper was presented at the 2004 International Tire Exposition and Conference ("ITEC"). The third paper, presented at the 2012 ITEC conference, was entitled *X-Ray Study of Sixty (60) Worn Out Passenger & Light Truck Tires*. Just this week, at the 2016 ITEC conference, I presented a paper entitled *Typical Manufacturing Condition in Belted Radial Tires: Do They Influence Tire Durability?*, which I co-authored with Vandy Price.

6. Over the course of my career in the tire industry and as an independent tire consultant, I have made a continuous effort to stay informed with respect reliable publications relating to tire analysis and tire failure issues. My tire analysis opinions are based on and rely on published texts, articles, reports, and literature. These publications are reliable and represent the general acceptance of tire analysts and tire scientists.

7. I have been qualified as an expert in the field of tires and wheels in various courts throughout the United States. To my knowledge, I have never been found to be unqualified to render expert opinions regarding tire design, manufacturing, performance, or failure analysis by any court, and my forensic tire analyses have never been excluded as scientifically unreliable.

8. In my expert report in this case, I provided the opinion that the subject tire exhibits road hazard impact damage that contributed to the failure of the tire, which had already been significantly damaged and weakened from overdeflected operation and excessive speed. As reflected in my report and the inspection notes I appended to it and made a part of the report, that opinion is based on the forensic evidence I identified in my examination of the subject tire that is diagnostic of a road hazard impact injury that is contributory to a tread/belt separation. These conditions included a localized area of separation between the #2 and #3 steel belts in the region

from 9:30 – 12:45 (the DOT number of the tire typically designates 12:00) on the opposite serial side; broken carcass cords on the opposite serial side in the area of the localized separation; broken #1 and #2 belt cords similarly in the area of the localized separation; a radial split through the tire carcass at approximately 11:30; portions of the tread and all four steel belts missing in this area, which is typical of an impact injury; and an abrasion in the off-shoulder region on the opposite serial side at approximately 12:00, which is similarly in the area of the localized separation. These kinds of conditions are generally accepted as indicators of a road hazard impact injury, as is reflected in the published NHTSA text, *Introduction to Tire Safety Durability and Failure Analysis*, The Pneumatic Tire, ed. A. Gent, J. Walter Eds., (NHTSA 2005), at pages 635-637, and the Society of Automotive Engineers book, Tire Forensic Investigation: Analyzing Tire Failure, T. Giapponi (SAE 2008), at pages 81-88.

9. In addition to this clear forensic evidence, my opinion is in fact based on basic tire science principles, a wealth of testing, and a host of other publications demonstrating how road hazard impact damage causes tire tread/belt separation.

10. First, the fundamental nature of tire mechanics and durability demonstrates that a structural disruption in the tire caused by an impact can create a variety of conditions that inevitably promote and contribute to separation in the laminate layers of tires. As the *Tire Examination After Motor Vehicle Crashes* chapter of the Northwestern Traffic Crash Investigation text, (J. Baker, L. Fricke, Eds., 11th Ed., Northwestern 2014) states at page 521:

> Impacts can also damage tires in ways that do not result in immediate rupturing or inflation pressure loss, but may do so some time later. Impact damage can cause internal breakage, tearing, and separation of components as they attempt to envelop the road hazard. This internal structural damage changes the ability of the tire to manage heat, stress, and strain. In addition, impacts sometimes make a breach, split or hole in the innerliner. This type of damage can permit the internal tire structure (*e.g.* belt and body

> plies) to become pressurized by the inflation pressure within the tire cavity, a condition known as intra-carcass pressurization (ICP). Internal structural damage, underinflation, and ICP can result in eventual tire disablement, including tread/belt detachment.

11. The fact that impact damage or road hazard injuries cause tread/belt detachments has been confirmed through documented testing, which has been reported in peer-reviewed publications. Standards Testing Laboratories ("STL") conducted a series of impact tests to steel-belted radial tires. The STL testing confirmed that impacts to tires cause tread/belt detachments, which is documented in the following published literature: *Impact Simulations – What Happens When a Tire/Wheel Impacts a Road Hazard*, Standard Testing Laboratories, Inc., Tire Technology International 2005; *Structural Impact Damage Under Varying Laboratory Conditions*, ITEC Paper 17B by Gary Bolden 2004; *Impact Simulations in the Lab*, Standard Testing Laboratories, Inc., Tire Technology International 2001. The STL testing also confirmed that impact damage can cause a tire to fail later after the road hazard injury. As stated in *Impact Simulations – What Happens When a Tire/Wheel Impacts a Road Hazard*:

> The dynamometer studies have also confirmed what many tire engineers have suspected: tires sustaining internal damage resulting from road hazards do not necessarily fail at the moment of impact. STL studies have demonstrated that tires may run in excess of 19,310km (12,000 miles) after impact before failure. Mileage to failure ranges from as little as 80km (50 miles) to over 32,186 km (20,000 miles) where the failure initiation progressed from point of impact.

12. I am also aware of additional impact testing conducted by STL on two different tires that were impacted on STL's impact machine and run to failure. This testing further confirmed that impact damage causes tread/belt separation failure in tires. I inspected the test tires, reviewed the test protocol and results, and spoke with STL representatives regarding the testing.

13. The fact that road hazard impact damage causes and contributes to tread/belt separation is also a generally accepted principle acknowledged by tire scientists and the tire industry, as evidenced by a host of publications, including the following representative materials, which were also listed in the appendix to my report in this case:

a. The Pneumatic Tire, ed. A. Gent, J. Walter Eds., (NHTSA 2005);

b. Traffic Collision Investigation (Northwestern University Center for Public Safety, 2001) at Chapter 8 page 399 & 400;

c. Traffic Crash Investigation, J. Baker and L. Fricke (Northwestern University Center for Public Safety, 2014) at pages 522 & 523;

d. Tire Forensic Investigation-Analyzing Tire Failures, T. Giaponni, (SAE 2008) at page 8;

e. Passenger and Light Truck Tire Conditions Manual (The Tire Industry Association 2004) at page 13;

f. *Belt Misalignment and Belt/Belt Tear Patterns,* H. Herzlich (ITEC 2002); and

g. Co*mmercial Medium Tire Debris Study,* US Department of Transportation, (NHTSA 2008).

The general acceptance of this concept in the tire industry is further confirmed by the 2013 Rubber Manufacturer's Association brochure, *Tire Care & Safety*, which states as page 26:

> Impact damage to the tire may initially show little or no exterior evidence. However, internal damage can progress with additional mileage and eventually cause internal tire separation, detachment or sudden loss of inflation.

14. My opinion regarding the contribution of road hazard impact damage to the specific failure in this case is supported by multiple physical conditions I identified in my forensic inspection of the subject tire, which are shown by the literature identified above to be generally accepted forensic indicators of such damage. More generally, my opinion is based on testing, publications including peer reviewed matters listed above, and general acceptance in the tire science community and the tire industry.

I state, under penalty of perjury pursuant to 28 U.S.C. Section 1746, that the foregoing is true and correct.

Executed on November 26, 2016.

Joseph L. Grant

CURRICULUM VITAE OF JOSEPH L. GRANT

PRESENT EMPLOYMENT: Independent Tire Analyst

HOME ADDRESS: 4201 Moss Creek Court
Matthews, North Carolina 28105
Phone 704 617 0336

EDUCATION: Bachelor of Science in Mechanical Engineering – June, 1971
Fenn College of Engineering, Cleveland State University

COURSES & SEMINARS:

- Tire Society Symposium
- Akron Rubber Group
- Clemson University Tire Industry Conference (October, 1985 and 1986)
- Monsanto Rubber Technology Seminar (May, 1989)
- SAE Motor Vehicle Accident Reconstruction and Cause Analysis (March, 1993)
- International Tire Exposition and Conference
- Northwestern University Traffic Institute Accident Investigation (March, 1997)
- STL Trans Tech Tire Technology Seminar – 1999

PROFESSIONAL ORGANIZATIONS:

- Society of Automotive Engineers
- Akron Rubber Group
- Rubber Manufacturers' Association
  Chairman - Truck Bus Tire
  Engineering Committee (1986-1992)
- Tire & Rim Association
- The Maintenance Council of the American Trucking Association
- American Society of Mechanical Engineers
- Tire Industry Association
- American Chemical Society

PUBLICATIONS:

"What makes a High Performance Tire Different than a Regular Tire"
Jan. 1986 - Akron Rubber Group
Oct. 1986 - Clemson University Tire Industry Conference
April 1987 - American Retreading Association

"Rim Line Grooves as an Indicator of Underinflated or Overloaded Tire Operation in Radial Tires"
September 2004 – ITEC

"X-Ray Study of Sixty (60) Worn Out Passenger & Light Truck Tires"
September 2012 - ITEC

PATENTS: Method of Forming Belted Radial Tires from a Cylindrical Tire Band (1977)

CURRICULUM VITAE OF JOSEPH L. GRANT

EMPLOYMENT:	· June 1971 – Dec. 1994	The General Tire & Rubber Company
	· Jan., 1995 – April 2000	Continental General Tire, Inc.
	· May 2000 – Dec. 2005	Continental Tire, North America, Inc.
	· Jan. 2006 – Present	Independent Tire Analyst

POSITIONS:

• June, 1971 — Engineering Trainee, Tire Technology Department, Akron Tire Manufacturing Plant (Akron, Ohio).

• October, 1972 — Project Engineer, Advanced Tire Development.
Responsible for the Development of Advanced Concept Tire Products, including Fiberglass Belted Radial Passenger Tires and Advanced Bias Truck Tires (Akron, Ohio).

• October, 1978 — Manager, Bias Passenger Car Tire Engineering Technology.
Responsible for the Engineering Development Group for Bias Passenger Tires (Akron, Ohio)

• April, 1980 — Manager, Replacement and Private Brand Passenger Car Tire Engineering Technology.
Responsible for the Engineering Development Group for Bias and Radial Passenger Tires (Akron, Ohio).

• March, 1987 — Section Manager, Radial Truck Tire Engineering.
Responsible for the Engineering (Construction and Mold Design) Development Group for Radial Truck Tires (Akron, Ohio).

• September, 1988 — Director, Commercial Tire Technology.
Responsible for the Engineering (Construction and Mold Design) and Compound Development Groups for Commercial Products, including Bias and Radial Medium and Heavy Service Truck Tires and Giant, Farm and Industrial Tires (Akron, Ohio, September 1988 - March 1992) (Mt. Vernon, Illinois, April 1992 - December 1992).

• January, 1993 — Director, Product Analysis.
Responsible as company-wide consultant to assist other Departments on the subject of Tire Failure Analysis, Tire Performance Standards, and Safety Literature (Akron, Ohio, January 1993 - October, 1995) (Charlotte, North Carolina, November 1995 – January 2006).

• January, 2006 — Independent Tire Analyst